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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/822,374	04/12/2004	Shuichi Ohkubo	NEC WNZ-2665	2825
27667	7590	02/14/2007	EXAMINER	
HAYES, SOLOWAY P.C. 3450 E. SUNRISE DRIVE, SUITE 140 TUCSON, AZ 85718			DANIELSEN, NATHAN ANDREW	
			ART UNIT	PAPER NUMBER
			2627	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	02/14/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

# Office Action Summary

Application No.

10/822,374

Applicant(s)

OHKUBO ET AL.

Examiner

Nathan Danielsen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 12 April 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 April 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
  - 2) ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 10/22/04
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

1. Claims 1-11 are pending.

***Priority***

2. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

***Drawings***

3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description:  $a_k$  and  $c_k$ . Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Claim Rejections - 35 USC § 112***

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claims 3 and 4 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Figures 1, 2, 7, and 8 show where the reproduced signals  $y_k$  are input to the Viterbi decoder, yet the specification fails to disclose any purpose for this or

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how this signal is used within the Viterbi decoder. In the descriptions/discussions of these figures, the only signal that is decoded by the Viterbi decoder is the *equalized* reproduced signal, i.e. that which is output from the FIR filter/equalizer.

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 3 and 4 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 3 recites the limitation "defining a target waveform as a waveform resulting from equalization of the reproduced signals based on binarized data demodulated by the Viterbi decoder...". It is unclear, based on this language, if the target waveform is based on demodulated binarized data or equalized reproduction signals. For purposes of examination, this limitation will be interpreted as --defining a target waveform as a waveform based on binarized data demodulated by the Viterbi decoder...-- as is shown in figures 1, 7, and 8.

Claim 3 further recites the limitation "a target waveform". It is unclear is applicant intends to claim multiple distinct target waveforms or a single target waveform (see claim 1).

Claim 3 is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential steps, such omission amounting to a gap between the steps. See MPEP § 2172.01. The omitted steps are: how/what the reproduced signals are used for in the Viterbi decoder, i.e. there is no claimed output resulting from the input reproduced signals.

Claim 4 is rejected as being dependent on an indefinite claim.

#### ***Claim Rejections - 35 USC § 102***

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

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(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claims 1, 3, 5, 6, 8, and 10 are rejected under 35 U.S.C. 102(b) as being anticipated by Fujiwara (US Patent Application Publication 2003/0002407).

Regarding claim 1, Fujiwara discloses a reproduced signal equalizing method for optical information media in which reproduced signals obtained by irradiating laser light to an optical information medium are equalized so as to bring a waveform thereof close to a waveform having a predetermined characteristic, the method comprising the steps of:

- sampling reproduced signals in a predetermined cycle (§ 60);
- calculating an equalization coefficient for producing a smallest difference between a target waveform and an equalized waveform by the least square technique by using a predetermined number or more of sampled waveform data (§ 63); and
- equalizing reproduced signals by using the calculated equalization coefficient (§ 63).

Regarding claim 3, Fujiwara discloses where the method further comprises the step of:

- inputting the reproduced signals sampled in the predetermined cycle to a Viterbi decoder (§ 63);

- and

- defining a target waveform as a waveform resulting from equalization of the reproduced signals based on binarized data demodulated by the Viterbi decoder and a partial response waveform (§ 78).

Regarding claim 5, Fujiwara discloses an optical information reproducing apparatus having a function for equalizing reproduced signals by using a reproduced signals equalizing method according to claim 1 (figure 1).

Regarding claim 6, Fujiwara discloses where the method further comprises the steps of:

- equalizing reproduced signals by using a reproduced signal equalizing method according to claim

- 1 (see above); and

- evaluating quality of the reproduced signals from the equalized reproduced signals and binary identification data (§§ 108-110).

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Regarding claims 8 and 10, Fujiwara discloses reproduced signal equalizing methods for optical information media in which reproduced signals obtained by irradiating laser light to an optical information medium are equalized so as to bring a waveform thereof close to a waveform having a predetermined characteristic, the method comprising the steps of, in order to read out information recorded on the optical information medium:

equalizing a predetermined number of samples of the reproduced signals by using a predetermined initial filter coefficient and generating a first equalized signal (§§s 74-77); identifying the first equalized signal by using a Viterbi decoder and obtaining a provisional identification result therefrom (§§s 78 and 79); generating a target signal from the provisional identification result and a predetermined partial response waveform (§§s 78 and 79); calculating a filter coefficient for producing a small difference between the target signal and the reproduced signals about the predetermined number of samples (§§s 78 and 79); equalizing the reproduced signals by using the calculated filter coefficient and generating a second equalized signal (§§s 78 and 79); and identifying the second equalized signal by using the Viterbi decoder (§§s 78 and 79).

***Claim Rejections - 35 USC § 103***

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claims 2, 9, and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fujiwara.

Regarding claims 2, 9, and 11, Fujiwara discloses everything claimed, as applied to claims 1, 8, and 10, respectively. However, Fujiwara fails to explicitly disclose the number of samples of waveform data is used but suggests in ¶ 60 where the sampling frequency is higher than a bit clock of the analog

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signal reproduced from the disc, as suggested by the use of the word "quantization". Further, obtaining a specific number, or range of numbers, of samples to use would then be considered a matter of routine experimentation and is therefore unpatentable (see MPEP § 2144.05(II)(A)). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used any number of samples, as taught by Fujiwara, for the purpose of obtaining an adequately representative digital signal corresponding to an analog input signal (§ 60).

12. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fujiwara, in view of Miyashita et al (US Patent Application Publication 2002/0064108; hereinafter Miyashita).

Regarding claim 4, Fujiwara discloses everything claimed, as applied to claim 3. However, Fujiwara fails to disclose a specific partial response value.

In the same field of endeavor, Miyashita discloses where a partial response value (1,2,2,2,1) is used as the partial response waveform (§ 55).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the apparatus/method of Fujiwara with the functionality of the apparatus of Miyashita, for the purpose of correctly decoding data using the marks preceding and succeeding the shortest mark (§ 55).

13. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fujiwara, in view of Akiyama et al (US Patent Application Publication 20020067670; hereinafter Akiyama).

Regarding claim 7, Fujiwara discloses everything claimed, as applied to claim 6. However, Fujiwara fails to disclose a writing condition adjusting method, wherein a *recording condition* is adjusted based on an evaluation result of a signal quality evaluation method according to claim 6.

In the same field of endeavor, Akiyama discloses where a recording condition is adjusted based on an evaluation result of a signal quality evaluation method according to claim 6 (§ 47).

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Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the apparatus/method of Fujiwara with the functionality of Akiyama, for the purpose of obtaining optimum recording/reproduction conditions (§ 47).

***Closing Remarks/Comments***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nathan Danielsen whose telephone number is (571) 272-4248. The examiner can normally be reached on Monday-Friday, 9:00 AM - 5:00 PM Eastern Time.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wayne Young can be reached on (571) 272-7582. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Nathan Danielsen  
02/08/2007

ND

WAYNE YOUNG  
SUPERVISORY PATENT EXAMINER